



Experiences of Interprofessional Education in Undergraduate Courses in Nursing, Physiotherapy and Medicine: A Qualitative Study

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Abstract

Background: Interprofessional education (IPE) collaborative practice contributes to the quality of care results, improving universal access and the quality of health prevention and treatment, as poor communication between health professionals can impair care in health services. This study evaluates qualitatively the experiences of interprofessional education reported by the study participants and the initiatives of interprofessional education in the pedagogical projects of undergraduate courses in Nursing, Physiotherapy and Medicine.

Methods: This is a qualitative exploratory cross-sectional study on the perception and experience of interprofessional education by students and teachers at a private university in São Paulo regarding the health area courses. A sociodemographic questionnaire to delineate the participants' profiles regarding age, gender, year of graduation, and area of work and two open questions.

Results: The main results were that course that presented more interprofessional academic experiences was Medicine, but still superficially and this can be explained by the fact that there is still little synergy between educational institutions and health services.

Conclusion: There are different understandings regarding the definition of interprofessionality with other terms such as interdisciplinarity and multiprofessionality, both in the speech of students and professors, and in the writing of the pedagogical project of the courses.

Keywords: Interprofessional Education; Teamwork; Collaborative Practice

Abbreviations: NCG: National Curriculum Guidelines; ESF: Family Health Strategy; F: Female; ICF: Informed Consent Form; IPE: Interprofessional Education; IPEC: Interprofessional Education Collaborative; M: Male; NASF: Family Health Support Center; PCC: Patient-Centered Care; WHO: World Health Organization.

Introduction

The foundations for interprofessional education (IPE), defined as the learning that takes place when two or more

professions learn about, with and from each other, in order to improve collaboration and health outcomes [1], should start in the early 2010s. IPE is a proposal where professions learn together about working together and about the specifics of each one, in improving the quality of patient care [2].

The imprecision of the concepts and terms used shows that it has not yet been possible to build a consensus, even if provisional, on the key elements that constitute teamwork and its variations: multidisciplinary, interdisciplinary, transdisciplinary or multiprofessional and interprofessional [3].

In general, the prefixes multi, inter and trans, in this sequence, denote an increasing degree of interaction, integration and coordination of disciplines or professions according to the term used below, disciplinary or professional, which refer, respectively, to the scope of the areas knowledge or disciplines and professional practices [4,5].

Conceptually, the difference between IPE and multiprofessional is that in the first case, students learn interactively about the roles, knowledge and skills of other professionals. In the second, educational activities take place between students of two or more professions together, however, in a parallel way, without necessarily having interaction between them [6,7].

IPE provides the ability to share skills and knowledge between professions and allows for a better understanding, shared values and respect for the work of other health professionals [8-12]. It is the main strategy to train health professionals prepared for teamwork and health care, in which collaboration and recognition of the interdependence of areas predominate in the face of competition [13,6].

In recent years, the theme has been emphasized in periods of health policy reform and teamwork has also been addressed in the context of professional training to strengthen health systems and reorient curricular reforms from the perspective of IPE. The transformation in the training and preparation of undergraduates reflects the preparation and qualification of professors for the adoption of IPE principles in health courses, making them more apt for interprofessional and collaborative work, encouraging them to develop initiatives guided by theoretical bases -conceptual and methodological aspects of this type of education, observing the specificities of higher education institutions, health services and their regional and cultural diversities [14].

The results of the EIP also have an impact on the quality of health care. Peduzzi and Agreli [15] state that interprofessional collaborative practice contributes to the quality of care results, improving universal access and the quality of health prevention and treatment, as poor communication between health professionals can impair care in health services. health. This study evaluates qualitatively the experiences of interprofessional education reported by the study participants and the initiatives of interprofessional education in the pedagogical projects of undergraduate courses in Nursing, Physiotherapy and Medicine.

Methods

This is a qualitative exploratory cross-sectional study on the perception and experience of interprofessional education by students and teachers at a private university in São Paulo

regarding the health area courses. The Research Ethics Committee of the Medical School of the Universidade de São Paulo approved the research (No. 3.011.083). All participants signed the free and informed consent form (ICF), ensuring confidentiality regarding the identity and origin of the respondent.

As inclusion criteria, student participants should be regularly enrolled in the final year of the Nursing, Physiotherapy, and Medicine courses. The teacher participants should teach disciplines/supervised internship/internship for students in the final year of their respective courses. The exclusion criteria were as follows: students who had not signed the consent form had a locked registration or were dismissed, teachers who were not regularly enrolled in the last two semesters of the courses or visiting teachers. Participation was voluntary, and there were no gains or advantages of any nature; similarly, the non-participation did not result in damage. A total of 310 students enrolled in the penultimate and last semester of the Nursing, Physiotherapy, and Medicine courses, and 85 teachers who teach classes for these courses and periods were included in the study.

Research Instruments

The research, its objectives, and methods were presented to the students. Those who agreed to participate received the link to the questionnaire in the Google forms tool (Google LLC, CA, USA), an electronic platform for data collection and analysis. Participation was voluntary and conditioned on the signature of the ICF. After accepting the ICF, the participants had access to a sociodemographic questionnaire to delineate the participants' profiles regarding age, gender, year of graduation, and area of work and two open questions. Data collection was performed in the period from August 2019 to July 2020. The universe of final-year students of the courses studied was accessed by electronic mail and in person at the end of an activity in the classroom, with the help of teachers.

Data Analysis

The analysis of qualitative data was performed using content analysis methods. The conduction of the data covers several steps, in order to verify the significance of the collected data [16,2,17]. Regarding the different phases inherent to content analysis, the authors differ in the use of terminology, however, they present similarities. In view of such diversity, but even so, terminological approximation, it was decided to take as a guide, for this study, the stages of the technique proposed by Bardin (2011) [18], since it is the most cited work in qualitative studies. in the field of Health. These steps are organized into three phases: 1) pre-analysis, 2) exploration of the material and 3) treatment of results, inference and interpretation.

Documentary analysis

For the analysis of pedagogical projects, document analysis was carried out, a qualitative approach method that emphasizes the importance of information that can be generated from a careful and critical look at documental sources. The method goes beyond the technique, as it considers four dimensions that demarcate this differentiation, namely: the epistemological one, because from a science model it is evaluated whether a research is scientific or not; the theoretical, which considers the concepts and principles that guide the interpretive work; the morphological, since the object of investigation is systematically structured and, finally, the technique, which deals with the control of data collection and the necessary dialogue between them and the theory that gave rise to them [19].

Results

Sample Description

The study sample consisted of 310 students enrolled in the final year of the Nursing, Physiotherapy, and Medicine courses of a private university in São Paulo, 48 students did not answer the survey, and six students had deferred the course. The universe of teachers who teach the final-year classes of the courses of the same university consisted of 85 teachers; 17 did not respond to the survey.

The study included 256 students and 68 teachers, with 72 (28%) students and 22 (32%) teachers from the Physiotherapy course, 69 (27%) students and 29 (43%) teachers from the Medicine course, and 115 (45%) students and 17 (25%) teachers from the Nursing course. Regarding gender, 200 (78%) of the student respondents are female, and 56 (22%) are male. Of the 68 teacher respondents, 52 (76%) are female, and 16 (24%) are male (Table 1).

Regarding the students' age range, 178 (70%) are between 20 and 24 years old, 52 (20%) between 25 and 29 years old, 14 (5%) between 30 and 34 years old, seven (3%) between 35 and 39 years old, and five (2%) above 40 years old. As for the teachers' age bracket, 11 (16%) are between 30 and 34 years old, 15 (22%) are between 35 and 39 years old, and 42 (62%) are above 40 years old. As for the semester in which they are enrolled, 114 (45%) students are in the penultimate semester, and 142 (55%) are in the last semester. Regarding the students who have financial aid, 118 (46%) students do not have any aid program, 35 (13%) are scholarship students, 50 (20%) are ProUni students, 50 (20%) have FIES, and three (1%) are quota holders (Table 1).

Regarding the time that the teachers have been teaching, 15 (22%) have up to two years' experience, 18 (27%) have from three to five years, 9 (13%) have from six to eight years, and 26 (38%) have more than nine years (Table 1).

	Students	Teachers
Course		
Nursing	115	17
Physiotherapy	72	22
Medicine	69	29
Sex		
Fem.	200	52
Male	56	16
Age Group		
20–24 years old	178	0
25–29 years old	52	0
30–34 years old	14	11
35–39 years old	7	15
Over 40 years old	5	42
Semester of Enrollment		
Penultimate	114	
Last	142	
Financial Aid		
No	118	
Fellows	35	
ProUni	50	
FIES	50	
Quota Student	3	
Teaching Experience		
Up to 2 years	15	
From 3 to 5 years	18	
From 6 to 8 years	9	
Over 9 years	26	

Table 1: Characterization of the sample.

Source: Research Data.

Qualitative Analysis of the Perception of Interprofessional Education by Students and Teachers

The analysis of the data produced from the answers to the two open questions answered by the professors and students was carried out. Question 1 "What do you understand by Interprofessional Education?" was divided into four categories in the analysis of professors' responses: integration of health professions, quality of care, exchange of experiences and interdisciplinarity. Question 2 asked to teachers "Do you have or have you had experience in interprofessional education? If yes, please describe. If not,

what obstacles?”, was divided into four categories: academic experiences, clinical practice, social and extension projects and absences of academic experiences.

Question 1 asked to students “What do you understand by Interprofessional Education?” was divided into five categories: integration of health professions, quality of care, exchange of experiences, interdisciplinarity and lack of knowledge. Question 2 asked to students “Describe an experience in interprofessional education and its main learning”, was subdivided into two questions, in which the first part of the question “Describe an experience in interprofessional education” divided into four categories: academic experiences, clinical practice, social and extension projects and absence of academic experiences. The second part of question 2 “Main learning from the interprofessional experience” was divided into four categories: teamwork, exchange of experiences, quality of care and leadership.

Analyzing the categories produced in question 1 of the teachers, the items joining different areas acting simultaneously and professionals from different areas

teaching a class together for a course, were revealed in most of the speeches. A recurrence of definitions about what interprofessional education is can be observed, defined as acting together from different areas/health professionals, but these discourses differ in the final objectives, whether this action together for teaching or for care and good of the patient. In the speeches of the professors, the importance of preparing the student to integrate with several professional areas, to know the performance of other areas and to know their limits for teamwork is mentioned.

Other speeches mentioned in this category were in relation to the exchange of experiences and learning, integration of professions and improvement of health care due to this union of professions and integration. The professors observe that the integration of professions is important for the quality of health care, and in addition, it is clear in these speeches that the exchange of experience improves the professional knowledge of each one. Table 2 below shows the items of each category and the examples of speeches of the categories of question 1 teacher.

Categories	Items	Examples of participant sentences
Integration of Health Professions	Joining different areas with simultaneous action	“Interprofessional education is one that permeates and allows several and different professionals to aggregate their knowledge acting as a team”. (F5)
		“Occasions in which members of two or more professions learn together, in an interactive way, with the explicit purpose of advancing the perspective of collaboration, as a prerogative for improving the quality of health care”. (M52)
	Integration of professions	“When there is integration between different professions”. (F40)
		“Professional education aimed at integrating the different professions in that field, respecting their centers of knowledge, and structuring common work”. (F42)
	Exercise each one in their profession, interacting with other professionals	“Interprofessional learning relationship with more than one profession where each one exercises their attributions, but interacts with the others”. (F2)
Expansion in decision making	“Interprofessional education is capable of motivating and expanding contact with other professionals and expanding the experience of team decision-making”. (F30)	
Quality of Care	Health improvement due to the union of professionals	“When more professionals learn together aiming to improve health care”. (F38)
		“Integration between different areas to optimize results”. (F53)

Table 2: Analysis of data produced from the response of teachers to the question: “What is Interprofessional Education?”

Source: Research Data (2020)

Analyzing the discourses of the first question from the students’ point of view, for most participants in this research, interprofessional education is learning together with other

areas, it is the union of different areas for a common objective and the performance of several areas together. It is observed in the speeches that the common objective is related both to

learning for training and to the professional performance of health care.

Regarding collaboration between professions, few discourses refer to this issue, even though participants see learning between areas and professions, they do not correlate with

collaboration. There is also a certain misunderstanding regarding the definition of interprofessional education of some participants, as they correlate with multidisciplinary. The following table 3 contains the items of each category and the examples of speeches of the categories of question 1 student.

Categories	Items	Examples of participant sentences
Integration of Health Professions	Working in different areas together	"Relationship between professionals from different areas". (F46)
		"Learning to work together with several health professionals". (F115)
	Collaboration between professions	"Education between professionals where one helps the other". (M18)
		"Education where several professionals working together cooperating with each other". (M51)
Teachers from one area working in other areas of health	"Content taught by professionals from different areas". (M53)	
	"An education that involves several professionals from different areas". (F74)	
Quality of Care	The union of professionals from different areas for a common goal	"Different professionals who study and work for the same purpose". (F7)
		"It would be the action of several areas together, aiming at a broad study, resulting in a general care on a certain subject". (F175)
Exchange of Experiences and Learning	Learning together with other areas	"It would be teaching with other courses for the growth and development of students so that they learn to work together". (F2)
		"An education among other professionals from other areas". (F9)
	Learning among professionals	"It's learning how to interact with other specialties in an environment." (F104)
		"A project that involves teaching, using professionals from interconnected areas". (M181)
Interdisciplinary	Continuing education	"Continuing Education". (F15 and F56)
	Multidisciplinary	"Multidisciplinary Education". (M163)
		"Information about the various multidisciplinary areas that involve a profession itself". (F228)
	Integrated education	"An integrated education". (F170)
"To integrate skills, knowledge and specialties in an individualized therapeutic project". (F195)		
Ignorance	Lack of understanding about interprofessional education	"I don't know what this is". (F70)
		"I do not know what is". (F112)

Table 3: Analysis of data produced from the students' response to the question: "What is Interprofessional Education?"
Source: Research Data (2020)

From the research data, the second question is the description of the experiences in interprofessional education by teachers

and students. The understanding of interprofessional experiences on the part of professors is generally when they

do academic activities together with other professions, such as simply doing research work on a topic together or when in the same classroom there are other areas of health for learning content.

For most participants, the description of interprofessional experiences are positive and enriching experiences. This is from the point of view of professors who have had these experiences, but many report not having this type of experience in teaching or professional life and a minority

report finding the interprofessional experience a difficult teaching model.

Other descriptions of the experiences by the participating professors involve clinical experiences in internship or internship fields, in social or extension projects and manage to correlate the interaction of professions in professional practice. The following table 4 contains the items of each category and the examples of speeches of the categories of question 2 professor.

Categories	Items	Examples of participant sentences
Academic Experiences	Experiences in activities of disciplines and simulations	"The experience consisted of teaching for other areas of health with different backgrounds". (F7)
		"It was an experience in an interdisciplinary subject where we were 7 professors from different areas. We learned a lot among us teachers and this reflected in the students' learning". (F24)
	Positive experiences	"Positive: good relationship with the team". (M27)
		"Yes/positive, it was a great experience and learning for my professional growth". (M35)
Difficulties in applying the experience	"I think it is difficult to reconcile these different groups". (F36 and F40)	
Absence of Academic Experiences	No experience in interprofessional education	"I have no experience". (F34)
		"I didn't have a chance." (M48)
Clinical Practice	Experience in clinical practice environments and internships	"Work developed within the hospital environment with the participation of several areas (Psychology; Nursing; Medicine and Social Work and Physiotherapy)". (F12)
		"Multiprofessional residency in health and practical internship at UBS with students of Medicine and Nursing". (M49)
Social and Extension Projects	Experience in Social and Extension Projects	"As a collaborator and preceptor in care, we worked with matrix support in the family health strategy, carrying out interprofessional work". (F33)
		"Community Interdisciplinary Program". (F62))

Table 4: Analysis of data produced from the response of teachers to the question: "Do you have or have you had experience in interprofessional education? If yes, please describe. If not, what obstacles?"

Source: Research Data (2020)

The students describe the experiences in interprofessional education as experiences experienced in the graduation stages, in simulation scenarios and in a discipline that intervenes in the community. The speeches show that the experiences are generally positive for those who had them, however, some students cannot describe interprofessional activities they have participated in and a minority describe it as a difficult learning model.

When thinking about interprofessional experiences, some students describe their participation in social and community projects or assistance in internships and internships. Some speeches show the presence of different areas of health in academic experiences, but participation in the health course is individual by area, that is, integration takes place only physically and not with exchange of experiences. Table 5 below shows the items of each category and the examples of speeches from the categories of student question 2.

Categories	Items	Examples of participant sentences
Academic experiences	Experiences in discipline activities and simulations	"I worked with pharmacy students in an activity at the college, where I realized the importance that each one has". (F5)
		"We had class together with the Biomedicine class, we did work and many activities together. We learned together and it would be great if every semester there were other classes for us to learn together. Having a point of view of other professionals is magnificent". (M89)
	Positive experiences	"In the health area, it is a very essential part, as it generally helps the entire team to offer quality treatment to patients". (M73)
		"I participated in the middle of the graduation performing human anatomy monitoring for students of the physical education course. The experience was positive for my personal learning and also because I was able to contribute with other people by sharing the study methods I used to remember the names of anatomical structures". (F206)
	Difficulties with academic dynamics	"I made mistakes that I learned from other people in other professions that led me to help a person in need". (F10)
		"I comply with discipline with Physiotherapy and Physical Education classes and I confess that the direction of the discipline leaves me confused". (F96)
Absence of Academic Experiences	No experiences in interprofessional education	"I did not witness any during my graduation". (F7)
		"I didn't participate in any." (F35)
Clinical Practice	Experience in clinical practice environments and internships	"I am a technician in Nursing and I work in the area. I work with doctors, physiotherapists, doctors and others. I think this is incredible, because we can exchange experiences and, with that, offer quality care to the client". (F50)
		"Hospital experience where it is possible to learn through interaction with different professionals". (F118)
Social and Extension Projects	Experience in Social and Extension Projects	"A visit to a reception center". (M62)
		"An example of this interprofessional experience would be the October Rosa event, which has breast cancer as its theme, but covers the areas of Physiotherapy, Nursing, Aesthetics, as means of action for this issue". (F175)

Table 5: Analysis of data produced from the students' answer to the question: "Describe an experience in interprofessional education"

Source: Research Data (2020)

The speeches show that the main learning for most students is teamwork and for others the exchange of experiences and knowledge, being able to understand the look of each area, facilitating the deal with daily professional difficulties.

The main learning can be observed in the speeches of some

students how to promote benefits for the patient and that promotes a better understanding of the individual as a whole, so they understand that they can perform a care in an integral way. Table 6 below shows the items of each category and the examples of speeches of the categories of the second part of question 2 student "Main Learning".

Categories	Items	Examples of participant sentences
Team work	Team work	“One experience was a project in one of the subjects we carried out together with Biomedicine. It was cool because we could see the importance of the union between professionals, each one has its own way of contributing”. (F9)
		“In the hospital, when I needed to be hospitalized, I saw the union of the physical therapist, nutritionist and nurses, I understood that this joint work is necessary”. (F108)
	Communication	“Participation in the care of amateur athletes, held at the Integrated Health Center of Universidade Anhembi Morumbi, where Physiotherapy worked together with nurses, doctors and chiropractors. The main learning is that we have to listen and respect our colleagues and that together and with communication it is possible to carry out a satisfactory work”. (M117)
		“Communication, without a doubt”. (F132)
Exchange of Experiences	Dialogue between fields of knowledge	“Multiprofessional team, where each professional performs his/her role with the same purpose as all other professionals, sharing their ideas and knowledge in terms of helping the patient, for example”. (F80)
		“We had class together with the Biomedicine class, we did work and many activities together. We learned together and it would be great if every semester there were other classes for us to learn together. Having a point of view of other professionals is magnificent” (M89)
Quality of Care	Promote benefits to patients	“In the current stage that I do, it occurs in a multiprofessional view and everyone collaborates with their knowledge in favor of the patient”. (F109)
		“Professionals from different areas working for the improvement of the soccer athlete”. (M181)
	View of the individual as a whole	“Nursing with Biomedicine we had to study together, but one focused a lot on the disease and the other on the patient, we unified it and started to see everything broader”. (M18)
		“During graduation we had the subject called PICS, where we interacted with students from different areas of health, it was very good because this experience gave us access to different visions of how to address the challenges imposed by everyday life”. (M100)
Leadership	Influence teams	“Lead a team from 9 health areas in the community friends program (@amigos.comunidade)”. (M251)

Table 6: Analysis of data produced from the students’ answer to the question: “Main learning in interprofessional experience”
Source: Research Data (2020)

Teaching methods

Analyzing the teaching methods of the projects of the three courses, some methods that emphasize interprofessionalism with a focus on professional practice are described. The three projects present Interprofessional Simulation scenarios as one of the teaching methods, as described below:

“Interprofessional Simulation Scenario is a type of simulation scenario that reproduces an interprofessional situation in a simulated way, in which students develop aspects more related to soft skills, such as leadership, communication, decision making, teamwork, ethics, etc., always working together with students from other courses. In the interprofessional simulation scenario, one or more students from each profession act in

the scenario assuming the role of professionals from their respective courses, while the others observe the scene. The scenario is always followed by a debriefing, where all students participate in order to analyze interprofessional performance, identify opportunities for improvement and develop learning insights. The debriefing should focus on learning objectives and, for an interprofessional simulation scenario, should be related to soft skills, as mentioned above.”

Other interprofessional teaching methods described are within the scope of professional practice in supervised internships or internship in Medicine. In these, the description of interprofessional activities are within the context of outpatient clinical practice, hospital and other

external places of action such as NGOs, schools, sports clubs, etc.

In external practices, the projects describe the following interprofessional practice:

“Outpatient Practice - External practice, carried out in an outpatient environment (environment for the care of outpatients such as offices and specialized clinics), in which the student performs practices, in a professional or interprofessional way, with individuals and/or groups that visit these outpatient clinics.”

“Hospital Practice - External practice, carried out in a hospital environment, in which the student performs practices with hospitalized individuals and/or groups, in a professional or interprofessional way (...)”

“Practice in other places of activity - External practice, carried out in other clinical and professional environments (schools, companies, sports clubs, NGOs, among others), in which the student carries out individual and/or collective interventions, in a professional or interprofessional way.”

In the pedagogical project of the Medicine course, there is an emphasis on interprofessional extension activities, with the insertion of a project to evaluate the life habits of the population served in the Primary Health Care network:

“With regard to extension, the Medicine course, in line with the Institutional Policy, started an Interprofessional Extension project, aimed at evaluating the life habits of the population served in the Primary Care network. This survey will be followed by the implementation of guidance and instruction measures for these users in order to change this reality and act promoting health to the population served by the Program. It is worth mentioning that this project was conceived with an interprofessional design, involving Physical Education and Nutrition professionals, and in partnership with the Municipal Health Department, having been approved by the Management Committee of the COAPES.”

The pedagogical projects of the three courses address teacher development action programs offered by the educational institution. They are focused on teaching methods and classroom dynamics. There is no evidence in the projects that is related to the training and insertion of teachers in the context of interprofessional education.

Discussion

The main learning for the students is teamwork and the exchange of experiences and knowledge, and they are reported in the speeches as “promoting benefits for the patient” and “promoting a better understanding of the individual as a whole”. These findings were consistent with the study in which participants highlighted teamwork, understanding the

roles of each one, reducing medical errors and improving the health of patients as the main impacts of IPE [20]. Homeyer, et al. [21] showed that IPE for medical and nursing students can encourage positive mutual attitudes, better understanding of professional roles in caring for patients and their caregivers, as well as improved information and knowledge exchange to cooperate during their practical work. diary. Other studies have emphasized that students’ attitude toward teamwork has increased mutual respect and understanding among different groups of health professionals [22,7]. In addition, the IPE provides opportunities to exercise how to cooperate in an interprofessional team [23].

In the analysis of the pedagogical projects of the courses, the main competences of collaborative interprofessional education described by IPEC [24] are not included in the PPCs of the Courses, they only appear as general competences. They are based on the NCGs of the courses with regard to professional competences and observing the NCGs of the Medicine [25,26], Physiotherapy [27], and Nursing [28] courses, interprofessional competences are described with misunderstandings and nomenclatures, with sayings such as “multiprofessional”, “interdisciplinary”, “interaction with other health professionals”, “communicating properly with co-workers”, not making clear the interprofessional performance and as a consequence the pedagogical projects of the courses also do not clearly present the description of interprofessional competences.

Regarding the teaching methods described in the PPCs of the courses, the interprofessional simulation scenarios, outpatient and hospital clinical practices within the scope of professional practice in supervised internships or internship in Medicine and interprofessional extension activities are the academic interprofessional methodological proposals. Batista, et al. [29] reported the experience of implementing the pedagogical projects of health courses on the Baixada Santista campus based on the training of a health professional from the perspective of interprofessional teamwork, with an emphasis on comprehensive care to the user, articulating the ethical, political, technical-scientific and human dimensions in training and acting in the field of health. For this training, several guiding principles were adopted, such as the implementation of curricular internships in the interprofessional logic; the development of interdisciplinary elective modules and inter-unit curricular activities carried out by two or more axes; the rearticulation of the teacher development program; the creation of more scenarios of practice and collaborative work that articulate university and services, all based on the IPE as a guideline for this project and this implied in a training proposal that broke with the traditional structure centered on disciplines and on the specific training of a certain professional profile [29].

In this study, the programs of teacher development actions offered by the educational institution described in the PPCs were observed, but these actions are focused on teaching methods and dynamics in the classroom, not showing training and insertion of teachers in the context of interprofessional education. As colleges play a very critical role in providing PPE, Alruwaili, et al. [30] suggest that conducting faculty development programs is essential to prepare and support IPE facilitators in order to deliver interprofessional education effectively and these reports corroborate the findings of Batista, et al. [29] who observed that the insertion of educators (teachers and administrative technicians educators) in the knowledge of the guiding principles of IPE, interdisciplinarity, active methods and inducing policies, were important for the implementation of IPE in the projects of the courses of health and the Baixada Santista campus.

Lima, et al. [31] analyze 57 pedagogical projects of the courses for the professions that make up the teams of the Family Health Strategy (ESF) and the Family Health Support Center (NASF) on the themes of aging and interprofessional education and in none of the investigated courses contemplated a deeper discussion about these themes, and these authors conclude that these facts may be linked to the disarticulation of educational institutions with the social dynamics and, therefore, with the dynamics of health services, in addition to the lack of interest of the body doc.

Its limitations are not limited to the study that was carried out only in a private university in São Paulo and the data analysis was for this audience and documents of the same. Another limitation may be the number of courses studied at this university, as it has a health area of 16 courses that are part of some academic activities.

Conclusion

This study identified that the initiatives of interprofessional education in the pedagogical projects of all courses are punctual throughout the academic training, since few curricular units address the theme in their menus. The course that presented more interprofessional academic experiences was Medicine, but still superficially and this can be explained by the fact that there is still little synergy between educational institutions and health services. There are different understandings regarding the definition of interprofessionality with other terms such as interdisciplinarity and multiprofessionality, both in the speech of students and professors, and in the writing of the pedagogical project of the courses. That it is necessary to mobilize educational institutions to collectively build educational projects that promote IPE.

Declarations

Acknowledgements: Not necessary.

Authors' contributions

All authors conceived the idea presented. L.G.A.V. carried out the experiment.

L.G.A.V. and P.Z.T developed the theory. L.G.A.V. and P.Z.T wrote the methods section.

L.G.A.V., A.O.S. and P.Z.T. conducted the analyses and wrote the results section. All

authors collaborated on the discussion section. All authors discussed the

results and contributed to the final manuscript. A.O.S. and P.Z.T supervised the

conceptualization and process of writing the paper. All authors read and

approved the final manuscript.

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Ethics Approval and Consent to Participate

All procedures in this study were performed in accordance with the ethical standards of the German Psychological Society, of the 1964 Helsinki Declaration and its later amendments and were approved by the Research Ethics Committee of the Medical School of the Universidade de São Paulo approved the research (#3.011.083). Informed consent was obtained from all individual participants included in the study.

Consent for publication: Not applicable.

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References

1. World Health Organization (2010) Framework for action on interprofessional education and collaborative practice.
2. Barr H (1998) Competent to collaborate: towards a competency-based model for interprofessional education. *J Interprof Care* 12(2): 181-188.
3. Peduzzi M, Agreli HLF, Silza JAM, Souza HS (2020) Trabalho em equipe: uma revisita ao conceito e a seus desdobramentos no trabalho interprofissional. *Trab Educ Saúde* 18(1): e0024678.
4. Furtado JP (2007) Equipes de referências: arranjo institucional para potencializar a colaboração entre as disciplinas e profissões. *Interface (Botucatu)* 11(22):

- 239-55.
5. Peduzzi M, Norman IJ, Germani ACCG, Silva JAM, Souza GC (2013) Interprofessional education: training health professionals for teamwork with a focus on users. *Rev Esc Enferm USP* 47(4): 977-83.
 6. Barr H (2005) *Interprofessional education: today, yesterday and tomorrow: a review*. London: Higher Education Academy, Health Sciences and Practice Network.
 7. Reeves S (2008) *Developing and delivering practice-based interprofessional education*. Berlin: Verlag Dr. Müller.
 8. Karim R, Ross C (2008) Interprofessional education (IPE) and chiropractic. *J Can Chiropr Assoc* 52(2): 76-8.
 9. Craddock D, O'Halloran C, Borthwick A, McPherson K (2006) Interprofessional education in health and social care: fashion or informed practice?. *Learn Health Soc Care* 5(4): 220-42.
 10. Jones RV (1986) Working together - learning together. *J R Coll Gen Pract Occas Pap* 33: 1-26.
 11. Lumague M, Morgan A, Mak D, Hanna M, Kwong J, et al. (2006) Interprofessional education: the student perspective. *J Interprof Care* 20(3): 246-53.
 12. Bridges DR, Davidson RA, Odegard PS, Maki IV, Tomkowiak J (2011) Interprofessional collaboration: three best practice models of interprofessional education. *Med Educ Online* 16(1): 1-11.
 13. Batista NA (2012) *Educação Interprofissional em Saúde: Concepções e Práticas*. Caderno FNEPAS 2: 25-8.
 14. Ministério da Saúde (BR) (2018) *Política Nacional de Educação Permanente em Saúde: o que se tem produzido para o seu fortalecimento?*. Brasília: Ministério da Saúde.
 15. Peduzzi M, Agreli HF (2018) Teamwork and collaborative practice in Primary Health Care. *Interface (Botucatu)* 22(2): 1525-34.
 16. Alves-Mazzotti AJ, Gewandsznajder F (1998) *O método nas ciências naturais e sociais: pesquisa quantitativa e qualitativa*. São Paulo: Pioneira.
 17. Minayo MCS. (Org.) (2001) *Pesquisa social: teoria, método e criatividade*. Rio de Janeiro: Vozes.
 18. Bardin L (2011) *Análise de conteúdo*. São Paulo, Edições.
 19. Gomes R (2007) *Análise e interpretação de dados de pesquisa qualitativa*. 26th (Edn.), In: Deslandes SF, Gomes R (Eds.), Minayo MCS. (org). *Pesquisa social: teoria, método e criatividade*. Petrópolis, RJ: Vozes.
 20. Alaradi M, Abdulsalam M, Albenjasim K, Alwahoush OA, Abdulmalek S, et al. (2021) Nursing and medical students' perceptions of interprofessional education and social interactions: A qualitative study. *Clin Nurs Stud* 9(2): 12-9.
 21. Homeyer S, Hoffmann W, Hingst P, Oppermann RF, Dreier-Wolfgramm A (2018) Effects of interprofessional education for medical and nursing students: enablers, barriers, and expectations for optimizing future interprofessional collaboration - a qualitative study. *BMC Nurs* 17: 13.
 22. Maharajam MK, Rajiah K, Khoo SP, Chellappan, Alwis RD, et al. (2017) Attitudes and readiness of students of healthcare profession towards interprofessional learning. *PLoS One* 12(1): e0168863.
 23. (2003) Institute of Medicine Committee on the Health Professions Education Summit. *Health professions education: a bridge to quality*. In: Greiner AC, Knebel E (Eds.) *Healthprofessions education: a bridge to quality*. Washington, DC: National Academies Press (US).
 24. *Interprofessional Education Collaborative IPEC (2016) Core competencies for interprofessional collaborative practice: 2016 update*. Washington, DC: Interprofessional Education Collaborative.
 25. Ministério da Educação (BR) (2001) *Diretrizes Curriculares para os Cursos de Graduação*. Resolução CNE/CES nº 3, de 7 de novembro de 2001. Brasília.
 26. Ministério da Educação (BR) (2014) *conselho nacional de educação Câmara de educação superior*. Resolução CNE/CES nº 3, de 20 de junho de 2014. Brasília.
 27. Ministério da Educação (BR) (2002) *Conselho Nacional De Educação Câmara De Educação Superior*. Resolução CNE/CES nº 4, de 19 de fevereiro de 2002. Brasília.
 28. Ministério da Educação (BR) (2001) *Conselho Nacional De Educação(*) Câmara De Educação Superior*. Resolução CNE/CES nº 4, de 7 de novembro de 2001. Brasília.
 29. Batista NA, Rossit RAS, Batista SHSS, Silva CCB, Uchôa-Figueiredo LR, et al. (2018) Interprofessional health education: the experience of the Federal University of Sao Paulo, Baixada Santista campus, Santos, Brazil. *Interface (Botucatu)* 22(2): 1705-15.

30. Alruwaili A, Mumena N, Alharthy N, Othman F (2020) Students' readiness for and perception of Interprofessional learning: a cross-sectional study. *BMC Med Educ* 20(1): 390.
31. Lima RRT, Vilar RLA, Castro JL, Lima KC (2018) Interprofessional education and aging: analysis of pedagogical health projects. *Interface (Botucatu)* 22(2): 1661-73.